Yam near Lake Catani, but unfortunately the insect's head was broken off and lost in the post; a series was collected near View Point, and one bee was captured not far from the Chalet.

A few days later more specimens were caught near the hut at the foot of the Hump, at approx. 5,000 feet altitude, by Miss E. Colline Chugg, who observed many females burrowing into the granitic soil. There was a number of holes, at which the bees maintained a busy traffic to and fro, while numbers of males hovered over the mound.

BEES FROM THE VICTORIAN ALPS

By Tarlton Rayment, F.R.Z.S., Melbourne

A collection of bees taken by Hugh C. E. Stewart, at Mount Buffalo, during the last week of December, 1946, and the first week in January, 1947, yielded more individuals and a few more species than he obtained on any of his previous visits to the highlands of the State. It would appear that the Victorian Alps are richer in APIDAE than has been hitherto expected. Systematic observation and collection should yield more surprises, for often the heavy falls of snow at that altitude persist for several months.

Several good series were also taken by a youthful member of the F.N.C.V. party, E. Colline Chugg, during the second week. This young naturalist of fifteen years is to be congratulated, not only on her zeal in collecting, but also on her careful mounting and neat labelling of the specimens, which simplified my study of them very considerably.

That the bees of Mount Buffalo (5,000-odd feet), in Victoria, should approach those of the island of Tasmania, 100-200 miles farther south, should occasion no surprise, for the altitude offsets the difference in latitude, so that the ecology is not dissimilar.

At the time of this visit, the flora was in all its glory. While alpine conditions are responsible for high specialization in the flora, yet the bees of the Mount are but little different from specimens taken along the lower areas of the littoral zone.

On the other hand, the honey-gatherers of the great arid centre of Australia are characteristic of that region, and it would appear that heat, as a factor in the evolution of bees, is of more importance than cold.

The forty or so specimens (including Miss Chugg's), among which is a new species, have been determined by me as follows:

Family *HYLAEIDAE*

Hylaeus eugeniellus Ckll.

One female, larger than the type, and minus the light stripe on the prothorax and the cream-coloured hind tarsi.

On flowers of the Alpine Daisy, *Brachycome cardiocarpa*, var. *alpina*.

Euryglossa subsericea Ckll.

A robust female, indistinguishable from specimens collected at Como (New South Wales). Sandringham (Victoria) specimens have red tarsi, and the tegulae are fulvous; the wing-nervures much paler.

Mackey's Lookout, Mount Buffalo, Vic., Jan. 10, 1947. E. Colline Chugg.

Family *COLLETIDAE*

Paracolletes irroratus F. Smith

Cockerell (1914) suggested that Fred. Smith (1853), at the British Museum, described this species under two names, the other being *Dasycolletes humerosus* 1879. Later, Cockerell (1914) described *P. humerosus cyanurus* from Oakleigh, Victoria.

A Mount Buffalo female is the large, more robust typical one of Smith's *P. humerosus*, the large shining convex clypeus having a few coarse punctures; the supraclypeal area polished; mandibles black.

The females of Cockerell's subspecies, *cyanurus*, seem to belong to a male from Emerald (in the Dandenong Hills, twenty miles farther east) and this may be known as the allotype. It has a more slender form, with much long white hair covering the face; closely punctured dull clypeus and supraclypeal area, and the straw-yellow "epaulettes" of the mesothorax. On the Buffalo specimens these are of a rich golden colour.

Females which I collected at Croydon, V., are typical except for the reddish mandibles. This locality is between Emerald and Oakleigh.

Mackey's Lookout, Mount Buffalo, Jan. 10, 1947. E. Colline Chugg.

Paracolletes obscurus F. Smith

One robust female, which I refer to this somewhat unsatisfactory species. There are slight bands of loose white hair on the abdomen.

Mackey's Lookout, Jan. 10, 1947. E. Colline Chugg.

Paracolletes leai Ckll.

A long series of males and two females, near to this species, which was described from Tasmania. Later, Professor Cockerell discussed a bee which was collected on King Island, roughly halfway between Victoria and Tasmania. It is a male, and he referred it provisionally to this species, although he thought that it might ultimately prove to be a closely related but distinct species.

The males now before me conform to his notes on the King Island insect, but the female is not a typical *leai*, and is not conspecific; therefore, a new name is advisable. I propose the name *Paracolletes stewarti*, and have given a specific description in the preceding article.

Paracolletes stewarti, sp. nov.

[For full description and discussion, see p. 102]

Paracolletes providellus Ckll.

Two females, typical and indistinguishable from specimens collected by me at Emerald, Victoria.

Mackey's Lookout, Jan. 10, 1947. E. Colline Chugg.

Heterocolletes capillatus Raym.

Three robust females, which cannot be distinguished from the allotype taken by me on the hills of Emerald, Victoria, in 1934.

These black shining bees are easily identified by the mass of long hairs which project from between the numerous facets of the compound eyes, a character found also in the hive-bee.

The genotype, a male, was taken by the late J. A. Kershaw, sometime Director of the National Museum, Melbourne, on Wilson's Promontory, Victoria, in 1929. Several hundred male insects were clustered together in a dry curled bracken frond, and I was able to verify this observation at Emerald. However, the trait is also characteristic of the males of Paracolletes.

The Buffalo record is the third of the species.

Mackey's Lookout, Mount Buffalo, Jan. 10, 1947. E. Colline Chugg.

Family *HALICTIDAE*

Halictus asperithorax Ckll.

A female, not quite typical, having entirely black legs, but otherwise indistinguishable from specimens taken at Sandringham.

Mackey's Lookout, Mount Buffalo, Vic., Jan. 10, 1947. E. Colline Chugg.

Halictus gilesi Ckll.

One black female, not quite typical, since the fine punctures of the scutellum tend to become microscopically rugose. It is, in any case, excessively close to *gilesi*.

On flowers of *Brachycome* sp.

Halictus humiliformis Ckll.

A series of robust females, not typical, for some have a bright royal-blue mesothorax, but the mesonotum in others is a dull dark-green, and there are intermediate links.

On flowers of *Brachycome* sp.

Halictus imitans Ckll.

One black female, not exactly typical, since it is a trifle larger, with the rugae of the metathoraxic area coarser, and tending to anastomose.

On flowers of *Brachycome* sp.

Parasphecodes cirriferus Ckll.

One female, which seems to conform to Cockerell's description of the type.

Collected on the yellow flowers of the "Yam," *Microseris scapigera*.

Parasphecodes tilachus F. Smith

A series of females, all of which appear to conform to Smith's quite inadequate description. In the absence of his type specimens, accurate determination of this group is often impossible.

On the flowers of the "Yam," *Microseris scapigera*.

Parasphecodes wellingtoni Ckll.

A female conforming very well to the specific description, except that tergite No. 1 lacks the black patch. However, the species was described from Mount Wellington (alt. 1,300 to 2,300 ft.), Tasmania, but a subspecies, *P. wellingtoni griseipennis* Ckll., was taken at the Blue Mountains, New South Wales, on flowers of Golden Everlasting (*Helichrysum bracteatum*).

Parasphecodes melbournensis Ckll.

One female, quite typical, and indistinguishable from Emerald and Sandringham specimens.

Mackey's Lookout, Mount Buffalo, Vic., Jan. 10, 1947. E. Colline Chugg.

Family *MEGACHILIDAE*

Megachile chrysopyga F. Smith

A robust male, not quite typical, but antennae black (ferruginous beneath in *chrysopygopsis* Ckll.) and punctures of mesothorax not so close, with a delicate tessellation between, and more black hair; abdomen not so hairy. (*M. chrysopygopsis* has pale-straw to white hair on face; *chrysopyga* has deep-golden hair.)

Mackey's Lookout, Vic., Jan. 10, 1947. E. Colline Chugg.

Family *CERATINIDAE*

Exoneura montana Rayn.

A fine large female, and I refer this specimen to *montana* because my recent studies of the larval forms of this genus show how inadvisable it is to propose new species in the absence of "nest" series with larvae. Described from Macpherson Range, N.S.W.

On flowers of the Trigger-plant (*Stylidium graminifolium*).

Exoneura robusta Ckll.

A fine robust female to which all of the foregoing remarks equally apply.

On flowers of the Trigger plant (*Stylidium graminifolium*).

Exoneura angophorae Ckll.

Three females, not quite typical, but in the absence of the larval forms, I refer them provisionally to this species.

Mackey's Lookout, Mount Buffalo, Vic., Jan. 10, 1947. E. Colline Chugg.

Additional field notes by Mr. H. C. E. Stewart:

Not only the new *Paracolletes*, but also *Exoneurae*, were observed by me and other members of F.N.C.V. party to operate the curious mechanism of the Grass Trigger-plant (*Stylidium graminifolium*), which was in profuse flower everywhere.

Many of the bees were taken on *Compositae* at Reed's Lookout, and especially in the alpine meadow along the streamlet on the View Point track, and later around the Lake. The specimens at Mackey's Lookout, 3,100 feet, were all collected by Miss E. Colline Chugg. The best collections were made in bright sunlight, during the morning hours. Generally, the bees showed little activity in the afternoon.

In the alpine altitudes, Composites, such as *Microseris*, *Brachycome*, *Helichrysum* and *Helipterum*, invariably close their inflorescences in the afternoon, and even in dull light; the ray-florets of *Microseris* close very tightly *inwards*, whilst those of *Brachycome* curl *outwards*. The bees favoured these two genera. Composites not so susceptible to fading light are *Celmisia*, *Podolepis* and *Lagenophora*, and these were less attractive to the bees.

Many flowers of the introduced Flatweed, *Hypochaeris radicata*, were fully open, but we did not see a single bee on these. The first favourite was the Yam, *Microseris scapigera*, the yellow flowers of which resemble those of Flatweed and the Common Dandelion. This partiality for the *Compositae* was obviously due to the pollen, and the bright-yellow dust on bees taken from the Yam was particularly evident.

Richea continentis, an epacrid, was visited occasionally by bees, and we rarely saw one visiting the Mountain Shaggy-pea (*Oxylobium alpestre*), the Derwent Speedwell (*Veronica Derwentia*), or other native flora.

Honey-bees were also noted on the densely-clustered flowers of two related eucalypts, *Eucalyptus pauciflora* and *E. niphophila*, both of which are rich in nectar.

Family *APIDAE*

Apis ligustica + *A. mellifera* L.

A series of workers of the introduced hive- or honey-bee (*A. ligustica* + *A. mellifera*), many showing only a trace of the former race, were taken by E. Colline Chugg and Hugh C. E. Stewart.

These records are interesting. Since no domesticated hive-bees are kept at the Government Chalet, then these cross-breeds must have come from wild colonies established in the Snow Gums, and are able to survive unaided the cold and snow of the long Alpine winter.

For the reed bees, *Exoneurae*, in their frail shelters in reeds and rushes, the winter must indeed be a critical period.

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